

CLAIM AMENDMENTS

1. (Currently Amended) A composition comprising:
 - a) an electrode comprising:
 - i) a self assembled monolayer comprising conductive oligomers; and
 - ii) a nucleic acid capture probe;
 - b) a target nucleic acid sequence comprising a first nucleic acid portion that is hybridized to said capture probe, and a second portion that is not hybridized to said capture probe and comprises at least one covalently attached electron transfer moiety (ETM).

2. (Currently Amended) A composition comprising:
 - a) an electrode comprising:
 - i) a self assembled monolayer comprising conductive oligomers; and
 - ii) a nucleic acid capture probe;
 - b) a label nucleic acid probe comprising a nucleic acid first portion, a second non-nucleic acid portion comprising a recruitment linker that comprises a plurality of ETMs ~~at least one covalently attached electron transfer moiety~~ (ETM).

Claims 3-10: (Canceled)

11. (Currently Amended) A method of detecting a target nucleic acid sequence in a test sample comprising:
 - a) forming a hybridization complex including said target sequence and a capture probe; wherein said capture probe is on an electrode comprising a self assembled monolayer comprising conductive oligomers;
 - b) directly or indirectly attaching at least one label probe to said target sequence to form an assay complex, wherein said label probe comprises a first portion capable of hybridizing to a component of said assay complex, and a second portion comprising a recruitment linker that:
 - i) does not hybridize to a component of said assay complex; and

- ii) comprises a plurality of ETMs at least one covalently attached electron transfer moiety (ETM); and
- c) detecting the presence of said ETMs using said electrode.

Claims 12-13: (Cancelled)

14. (Original) A method according to claim 11 wherein said target sequence is attached to said electrode by hybridizing a first portion of said target sequence to a first capture extender probe, and hybridizing a second portion of said first capture extender probe to a capture probe on the electrode.

Claims 15-22: (Cancelled)

23. (Currently Amended) A composition comprising:

- a) an electrode comprising:
 - i) a self assembled monolayer; and
 - ii) a nucleic acid capture probe;
- b) a target nucleic acid sequence comprising a first nucleic acid portion that is hybridized to said capture probe, and a second portion that is not hybridized to said capture probe and comprises at least one covalently attached ETM electron transfer moiety (ETM).

24. (Currently Amended) A composition comprising:

- a) an electrode comprising:
 - i) a self assembled monolayer; and
 - ii) a nucleic acid capture probe;
- b) a label nucleic acid probe comprising a first nucleic acid portion, and a second non-nucleic acid portion comprising a recruitment linker that comprises a plurality of ETMs at least one covalently attached electron transfer moiety (ETM).

25. (Currently Amended) A method of detecting a target nucleic acid sequence in a test sample comprising:

- a) forming a hybridization complex including said target sequence and a capture probe; wherein said capture probe is on an electrode comprising a self-assembled monolayer;
- b) directly or indirectly attaching at least one label probe to said target sequence to form an assay complex, wherein said label probe comprises a first portion capable of hybridizing to a component of said assay complex, and a second portion comprising a recruitment linker that:
 - i) does not hybridize to a component of said assay complex; and
 - ii) comprises a plurality of ETMs at least one covalently attached electron transfer moiety (ETMs); and
- c) detecting the presence of said ETMs using said electrode.

26. (Currently Amended) A composition comprising:

- a) an electrode comprising:
 - i) a self assembled monolayer comprising conductive oligomers; and
 - ii) a nucleic acid capture probe;
- b) a label nucleic acid probe comprising a first portion and a second portion wherein said second portion comprises a recruitment linker comprising a plurality of ETMs a target nucleic acid; and
- c) a target sequence comprising a first portion hybridized to said capture probe and a second portion hybridized to said first portion of said label probe, wherein said second portion of said label probe does not hybridize to said target sequence a label nucleic acid probe comprising a first nucleic acid portion that is hybridized to said target nucleic acid, and a second nucleic acid portion comprising a recruitment linker that comprises at least one covalently attached electron transfer moiety (ETM).

27. (Currently Amended) A composition comprising:

- a) an electrode comprising:
 - i) a self assembled monolayer; and
 - ii) a nucleic acid capture probe;
- b) a label nucleic acid probe comprising a first portion and a second portion wherein said second portion comprises a recruitment linker comprising a plurality of ETMs a target nucleic acid; and
- c) a target sequence comprising a first portion hybridized to said capture probe and a second portion hybridized to said first portion of said label probe, wherein said second portion of said

~~label probe does not hybridize to said target sequence a label nucleic acid probe comprising a first nucleic acid portion that is hybridized to said target nucleic acid, and a second nucleic acid portion comprising a recruitment linker that comprises at least one covalently attached electron transfer moiety (ETM).~~

28. (Previously Presented) A composition according to claims 1, 2, 23, 24, 26, or 27 wherein said ETM is ferrocene.

29. (Currently Amended) A composition according to claim [[1]], 2, [[23]], 24, 26, or 27 wherein said label nucleic acid probe comprises a plurality of ETMs.

30. (Currently Amended) A composition according to claim [[1]], 2, [[23]], 24, 26, or 27 wherein said first portion of said label probe further comprises a covalently attached ETM.

31. (Currently Amended) A composition according to claim 1, 2, 23, 24, 26, or 27 wherein said assay complex composition further comprises an amplifier probe.

32. (Currently Amended) A composition according to claim 1, 2, 23, 24, 26, or 27 wherein said assay complex composition further comprises a capture extender probe.

33. (Previously Presented) A composition according to claim 1, 2, 23, 24, 26, or 27 wherein said monolayer further comprises insulators.

34. (Previously Presented) A composition according to claim 1, 2, 23, 24, 26, or 27 wherein said capture probe is attached to said electrode via a conductive oligomer.

35. (Previously Presented) A composition according to claim 1, 2, 23, 24, 26, or 27 wherein said capture probe is attached to said electrode via an insulator.

36. (Previously Presented) A method according to claim 11 or 25 wherein said label probe comprises a plurality of ETMs.

37. (Currently Amended) A method according to claim 11 or 25 wherein said target sequence is attached to said electrode by hybridization to [[a]] said capture probe.

38. (Currently Amended) A method according to claim 11 or 25 wherein said target sequence is attached to said electrode by

- a) hybridizing a first portion of said target sequence to a first portion of a first capture extender probe;
- b) hybridizing a second portion of said first capture extender probe to a first portion of [[an]] said capture probe on the electrode;
- c) hybridizing a second portion of said target sequence to a first portion of a second capture extender probe; and
- d) hybridizing a second portion of said second capture extender probe to a second portion of said capture probe.

39. (Previously Presented) A method according to claim 11 or 25 wherein said label probe is attached to said target sequence by hybridizing said first portion of said label probe to a first portion of said target sequence.

40. (Previously Presented) A method according to claim 11 or 25 wherein said label probe is attached to said target sequence by

- a) hybridizing a first portion of an amplifier probe to a first portion of said target sequence; and
- b) hybridizing at least one amplification sequence of said amplifier probe to said first portion of at least one label probe.

41. (Previously Presented) A method according to claim 11 or 25 wherein said label probe is attached to said target sequence by

- a) hybridizing a first portion of a first label extender probe to a first portion of a target sequence;
- b) hybridizing a second portion of said first label extender probe to a first portion of an

amplifier probe;

c) hybridizing at least one amplification sequence of said amplifier probe to said first portion of at least one label probe.

42. (Previously Presented) A method according to claim 11 or 25 wherein said label probe is attached to said target sequence by

a) hybridizing a first portion of a first label extender probe to a first portion of a target sequence;

b) hybridizing a second portion of said first label extender probe to a first portion of an amplifier probe;

c) hybridizing a first portion of a second label extender probe to a second portion of a target sequence;

d) hybridizing a second portion of said second label extender probe to a first portion of an amplifier probe;

e) hybridizing at least one amplification sequence of said amplifier probe to said first portion of at least one label probe.

43. (Previously Presented) A composition according to claims 2 or 24 wherein said second non-nucleic acid portion is a metallocene polymer.

44. (Previously Presented) A composition according to claim 43 wherein said metallocene polymer is a ferrocene polymer.